

# **METHOD AND APPARATUS FOR PERFORMING BUTTERFLY DIFFERENTIAL SIGNALING**

## **ABSTRACT**

One embodiment of the present invention provides a system that performs differential signaling through parallel ports in a manner that reduces noise caused by coupling between neighboring ports. The system includes parallel ports for transmitting differential signals from a sender to a receiver, wherein the parallel ports are organized in a two-dimensional grid. Each differential signal is transmitted through a first port and a second port that carry complementary positive and negative components of the differential signal. The first and second ports of a differential pair are diagonally adjacent to each other in the two-dimensional grid. Because the first and second ports transition in opposite directions, coupling noise is cancelled on a neighboring port that is horizontally adjacent to the first port and vertically adjacent to the second port. Moreover, a transition on the neighboring port couples equally to the first port and second port and is consequently rejected as common-mode noise by a corresponding differential receiver.